

### **REMARKS**

In response to the Office Action mailed May 17, 2006, Applicant respectfully requests reconsideration. Claims 35-55 were previously pending in this application. Claims 35, 47, and 52-55 have been amended. No new matter has been added. As a result, Claims 35-55 are pending for examination with Claims 35, 47, 54, and 55 being independent. The application is believed to be in condition for allowance.

#### **Summary of Telephone Conference with Examiner**

Applicant's representatives appreciate the courtesies extended by Examiner Vargot in granting and conducting the telephone conference of October 16, 2006. In preparation for the telephone conference, Applicant's representatives provided Examiner Vargot with a machine translation of the cited reference Yoshimi, Patent No. JP8137375 (Yoshimi), a draft of proposed claim amendments, and a summary of embodiments of Applicant's invention. During the telephone conference, Examiner Vargot had indicated that at least the claims comprising elements such as the various rollers (i.e., wind up and pinch rollers) would possibly be deemed allowable.

#### **Double Patenting Rejection**

The Office Action rejects Claims 35-55 under the judicially-created doctrine of obvious-type double patenting as purportedly being unpatentable over claims 21-25 and 27-35 of co-pending U.S. Patent Application No. 10/744,916. Applicant respectfully disagrees with this rejection. However, to expedite the prosecution of this application, Applicant submits herewith a Terminal Disclaimer with respect to U.S. Patent Application No. 10/744,916. Accordingly, Applicant respectfully requests that the double patenting rejection of Claims 35-55 be withdrawn.

#### **Rejections under 35 U.S.C. §112**

The Office Action rejects Claims 35-55 under 35 U.S.C. §112 for failing to comply with the written description requirement as containing subject matter which is not described in the specification. Specifically, the Office Action objects to the use of the word "distortions" in the

claims. Applicants have replaced the term “distortions” in Claims 35 and 47 with the phrase “curved peaks.” Support for the amendment to Claims 35 and 47 may be found in Applicant’s specification on page 7, lines 14-24.

The Office Action also rejects Claims 52 and 53 under 35 U.S.C. §112 for lack of antecedent basis in the terms “said first cured portion” and “the second cured portion.” Applicant has amended these phrases to “a first cured portion” and “a second cured portion,” thus providing sufficient antecedent basis.

Accordingly, withdrawal of the rejection of Claims 35-55 under 35 U.S.C. §112 is respectfully requested.

#### Summary of Embodiments Of Applicant’s Invention

An example of one embodiment of Applicant’s invention is described below to highlight some aspects of the invention. This embodiment is described primarily in Applicant’s specification at page 8, line 25 – page 9, line 24; also see Figures 4-6. It should be appreciated that the description below is merely an example of one of many embodiments that fall within the scope of Applicant’s claims and is provided for the purpose of highlighting some aspects of Applicant’s invention.

A process for forming a pattern in a radiation curable material is shown in Figure 6. A monomer material 116 is placed in a mold 102 comprising a *first pattern* of linear grooves 120. A base film 104 is placed over the monomer material filled mold 102. A mask film 108 is also placed *over* the base film 104. The mask film 108 may comprise a *second pattern* of a non-transparent design. Ultraviolet lamps 122 and 124 cure the monomer material 116 ***through the mask film 108 and the base film 104***. Due to the linear grooves 120 on the mold 102, the cured monomer material is patterned in the form of linear prisms (see Fig. 4). Due to the non-transparent design on the mask film 108, the linear prisms of the cured monomer material are *further* patterned, with the use of differential curing, with curved peaks (see Fig. 5). Thus, the patterning process described in Figure 6, ***simultaneously cures and patterns the first and second patterns*** a monomer material *through a mask film and through a base film*.

The foregoing summary is provided merely to assist the Examiner in appreciating various aspects of the present invention. The summary may not apply to each of the independent claims,

and the language of the independent claims may differ in material respects from the summary provided. The Examiner is requested to give a careful consideration to the language of each of the independent claims and to address each on its own merits, without relying on the summary provided above. Applicant does not rely on the summary to distinguish any of the claims of the present invention over the prior art, but rather, relies only upon the arguments provided below.

#### Rejections Under 35 U.S.C. §103

The Office Action rejects claims 35-55 under 35 U.S.C. §103(a) as being unpatentable over Martens, U.S. Patent No. 4,576,850 (Martens) in view of Yoshimi, Patent No. JP8137375 (Yoshimi). Applicant respectfully traverses this rejection.

#### Discussion of Cited References:

Martens illustrates a method of replicating surfaces bearing a microstructure (Col. 1, lines 1-2). As shown in Figure 9, an extrusion die 33 extrudes a curable mixture on to a metal mold 34 containing a lens pattern 35 (Col. 55, lines 22-28). A base film 36 is then placed on the metal mold 34 comprising the curable mixture (Col. 5, lines 28-33). The curable mixture is then cured with the use of lamps 42 irradiating the mixture through the base film 36, resulting in the formation of micro-lenses 43 (Col. 5, lines 33-37). Therefore the system described by Martens comprises of *one formation step* (resulting in the formation of *only one pattern*, the micro-lenses), which is placing the curable mixture in the mold.

Yoshimi illustrates a method of producing relief type holograms by using a dry process utilizing the photofixing and *thermal deformation* of relief patterns (abstract). The process of Yoshimi is explained in four steps. First, as shown in Figure 1, a photosensitive thermoplastics constituent 1 is placed on a base material 2 ([0015]). Second, as shown in Figure 2, a metal mold 3 is placed on the thermoplastics constitute layer and by applying *heat and pressure*, a toothing-like relief pattern 4 is formed ([0016]).

In other words, the pattern in Yoshimi *is not* placed on the constituent with the use of irradiation, as the metal mold used in placing the pattern *is not transparent*.

In a third and *separate step*, shown in Figure 3, optical exposure 6 is performed through mask 5 and then onto the front face of the toothing-like relief pattern 4 ([0016]). The optical

exposure 6 through mask 5 results in a differential curing of pattern 4 therefore forming fields 7, 8, and 9, shown in Figure 4, with differing degrees for hardening ([0016]).

In other words, the curing step of Yoshimi cures a pattern which has been placed onto the constitute in a *previous formation step*. Therefore, the curing and patterning steps taught in Yoshimi ***are not simultaneous***.

Finally, in a fourth step, shown in Figure 5, visualizes the photo-curing latent image recorded by steps 1-3 with the use of softening deformation performed by heating the relief image formation material ([0017]).

The Claims Distinguish Over Any Combination of Martens and Yoshimi:

The Office Action asserts that the simultaneous curing and patterning step as taught by the Applicant would have been obvious to one of skill in the art. The Office Action further asserts that the metal mold of Yoshimi is similar to the instant mold filling of Martens and that given the desire to pattern the elements formed in Martens in a manner as taught by Yoshimi, it would have been obvious to utilize the metal mask in a continuous manner. Applicant respectfully disagrees.

The Office Action is silent as to how exactly, given the prior art of record, it would have been obvious to one of skill in the art to *simultaneously* cure and pattern a liquid material, while *further* patterning the first formed pattern in the *same formation step*. Furthermore, the Office Action is also silent as to how it would have been obvious to one of skill in the art to irradiate the liquid material *through a base film and mask film* during the *simultaneous formation step*.

Yoshimi teaches the use of a ***metal mold*** to form patterns in the constitute. Applicant respectfully notes that the molds used in Yoshimi to form a pattern in the constitute *are not capable* of being irradiated through. Furthermore, Yoshimi shows the step of forming a pattern (with use of the metal mold by applying heat and pressure) and the step of further patterning (with the use of a mask by differential curing) *as two separate formation steps*. Therefore, even if one of skill in the art were to combine the teaches of Martens with that of Yoshimi, the references fail to teach or suggest irradiation through a mask *and* base film to perform *simultaneous* curing and patterning of an optical structure, while further patterning that optical structure. A combination of Martens and Yoshimi would most likely result in the use of a metal

mold to form a first pattern, though the use of heat and pressure, and the use of a mask to differentially cure the first patterned formed in a previous formation step.

Discussion of Claims 35-46:

Amended Claim 35 requires “simultaneously curing and patterning the liquid material by exposing it to the radiation source, wherein radiation passes through both the mask film and through the transparent base film at the same time, to reach the liquid material in the mold, and to thereby *cure the liquid material and at the same time to pattern cured optical structures and further patterning the optical structures with the curved portions in their shape as a single step*, the resulting curved optical structures thus being formed via differential exposure to radiation during the curing step, as caused by the mask film.” As should be appreciated from the discussion above in relation to the combination of Martens and Yoshimi, any combination of the references fails to teach or suggest irradiation through a mask and base film to perform simultaneous curing and patterning of an optical structure, while further patterning that optical structure. Thus, amended Claim 35 patentably distinguishes any combination of the prior art of record. Claims 36-46 depend from Claim 35 and patentably distinguish for at least the same reasons.

As should be appreciated from the above discussion relating to Claim 35, amended Claim 47 (from which Claims 46-53 depend), amended Claim 54, and amended Claim 55 patentably distinguish any combination of the prior art of record for at least the same reasons.

Accordingly, withdrawal of this rejection is respectfully requested.

Request for Concrete Evidence:

If the rejections under 35 U.S.C. §103(a) are to be maintained, Applicant respectfully requests that the Examiner provide documentary evidence in the next Office Action as is in accordance with MPEP § 2144.03(C). Specifically, Applicant respectfully requests provide documentary evidence and specifically point out as to how irradiation through a mask film *and* a base film in order simultaneously cure and pattern a liquid material, while further patterning the liquid material *in the same step* would have been obvious to one of skill in the art. If the Examiner is relying on personal knowledge to support this finding, an affidavit or declaration

setting forth specific factual statements and explanation to support this finding is respectfully requested (MPEP § 2144.03(C)).

**CONCLUSION**

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

David J. Thibodeau, Jr.

Registration No.: 31,671

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 11/14/06